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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
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| EXAMINER |
|---|
| GAMBEL, P |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1642 | |

**DATE MAILED:** 04/15/98

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

| Office Action Summary | Application No. 08/756,018 | Applicant(s) Seed et al. |
|---|---|---|
| | Examiner GAMBEL | Group Art Unit 1642 |

☒ Responsive to communication(s) filed on *Jan 5, 1998*.

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

**Disposition of Claims**

☒ Claim(s) *1-23* is/are pending in the application.

Of the above, claim(s) *1-9, 11, and 15-23* is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *10 and 12-14* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

**Application Papers**

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. § 119**

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

**Attachment(s)**

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

*--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---*

**DETAILED ACTION**

1. The location of your application in the PTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Art Unit 1642, Technology Center 1600.

2. Applicant's election without traverse of Group II and the species antibody domains as the organic molecules in Paper No. 9 is acknowledged.

Claims 10, 12-14 as it applies to antibody domains are under consideration.

Claims 1-9, 11 and 15-23 are withdrawn from further consideration by the examiner, 37 C.F.R. § 1.142(b) as being drawn to a nonelected invention and species.

3. Applicant should provide the current status of the parent application on the first line of the specification.

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. Applicant should restrict the title to the claimed invention.

5. The drawings submitted with this application were declared informal by the applicant. Accordingly, they have not been reviewed by a draftsperson at this time. When formal drawings are submitted, the draftsperson will perform a review.
Direct any inquiries concerning drawing review to the Drawing Review Branch (703) 305-8404.

6. The application is required to be reviewed and all spelling, TRADEMARKS, and like errors corrected.

Trademarks should be capitalized or accompanied by the ™ or ® symbol wherever they appear and be accompanied by the generic terminology. Although the use of trademarks is permissible in patent applications, the proprietary nature of the trademarks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

The specification lacks a heading of "Brief Description of the Drawings" and the heading "Detailed Description" is misplaced. See page 7 of the specification.

7. The following is a quotation of the first paragraph of 35 U.S.C. § 112:
The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 10 and 12-14 are rejected under 35 U.S.C. § 112, first and second paragraphs, as the claimed invention is not described in such full, clear, concise and exact terms as to enable any person skilled in the art to make and use the same, and/or for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The instant claims are indefinite in the recitation of "an organic molecule" because the characteristics of the "organic molecule" are not known. This language is vague and indefinite since it encompasses potentially thousands of different "organic molecules" and it is not apparent from the disclosure which particular "organic molecules" are being referred to. These "organic molecules" could be any molecule, with no apparent function or practical use, as well as known and unknown. Applicant has not provided sufficient biochemical information (e.g. molecular weight, amino acid composition, N-terminal sequence, etc.) that distinctly identifies the "organic molecules" encompassed by the claimed invention. The recitation of "organic molecule" fails to distinctly claim what that protein is and what the compositions are made up of. Therefore, there is insufficient information and guidance for the metes and bounds of the nucleic acids encoding said "organic molecules".

There is insufficient direction or guidance provided to assist one skilled in the art in the selection of such "organic molecules" nor is there sufficient evidence provided that such "organic molecules" could be used in a practical manner either in vitro or in vivo. It would require undue experimentation to produce all such possible "organic molecules" without more explicit guidance from the disclosure. It would require undue experimentation to investigate all such "organic molecules". It is readily apparent from the claimed invention which particular mechanism of action is being addressed or what is the scope of "organic molecules" encompassed by the claimed invention. Applicant has failed to enable or provide written description for nucleic acids encoding a myriad of "organic molecules" and fails to provide any guidance to those skilled generally on how to make and use useful nucleic acids encoding such a myriad of "organic molecules". Reasonable correlation must exist between the scope of the claims and scope of enablement set forth. It appears that undue experimentation would be required of one skilled in the art to practice the claimed nucleic acids that encode said "organic molecules" commensurate in scope with the claimed invention using the teaching of the specification alone.

The applicant is reminded that the amendment must point to a basis in the specification so as not to add any new matter.

9. Claim 10 and 12-14 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A) The instant claims depend upon a non-elected claim and should be written in an independent format.

B) The instant claims are indefinite in the recitation of "non-naturally occurring" because it is not clear how this relates to the elected invention encompassing nucleic acids. Similarly, the instant claims are indefinite in the recitation of "covalently bonded ... determinant" because it is not clear how this relates to the elected invention encompassing nucleic acids. Furthermore, it is noted that such modifications do not require that either the nucleic acid or the amino acid or said organic molecules being altered to have such modified determinants (e.g. chemically modified). Therefore, it is not clear how the limitations recited in claim 1 read on the elected invention of nucleic acids. Also, the metes and bounds of said limitations are ambiguous and not clear in the context of the elected invention. As defined on page 6, paragraph 3 of the instant specification; "purified nucleic acid" is DNA that is free of the genes which, in the naturally-occurring genome of the organism which the DNA of the invention is derived, flank the gene. Sialyl $Le^x$ determinants and sulfated determinants, are not required by the claimed invention drawn to nucleic acids.

C) Claim 12 is indefinite in the recitation of "antibody molecule" because it is not clear whether the metes and bounds encompass an entire antibody or immunoglobulin molecule or rather domains thereof for immunoglobulin fusion proteins. For example, applicant's election (Paper No. 9) elects organic molecules comprising "antibody domains". In view of the disclosure as filed and of applicant's election, the claims are being interpreted to encompass immunoglobulin fusion proteins.

D) The applicant is reminded that the amendment must point to a basis in the specification so as not to add any new matter

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

11. The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

12. Claim 10 and 12-14 are rejected under 35 U.S.C. § 102(e) as being anticipated by Seed et al. (U.S. Patent No. 5,723,583 (see entire document). Seed et al. teach recombinant antibodies including nucleic acids encoding said antibodies as well as the vectors and host cells comprising said nucleic acids. In addition, Seed et al. Teach such immunoglobulins with carbohydrate modifications. It is noted that all that is required for the instant elected claims drawn to nucleic acids is/are nucleic acid(s) encoding an organic molecule with antibody domains. As defined on page 6, paragraph 3 of the instant specification; "purified nucleic acid" is DNA that is free of the genes which, in the naturally-occurring genome of the organism which the DNA of the invention is derived, flank the gene. Sialyl $Le^x$ determinants and sulfated determinants, are not required by the claimed invention drawn to nucleic acids. Applicant is reminded that no more of the reference is required than that it sets forth the substance of the invention.

13. Claim 10 and 12-14 are rejected under 35 U.S.C. § 102(e) as being anticipated by Newman et al. (U.S. Patent No. 5,681,722 (see entire document). Newman et al. teach recombinant antibodies including nucleic acids encoding said antibodies as well as the vectors and host cells comprising said nucleic acids. It is noted that all that is required for the instant elected claims drawn to nucleic acids is/are nucleic acid(s) encoding an organic molecule with antibody domains. As defined on page 6, paragraph 3 of the instant specification; "purified nucleic acid" is DNA that is free of the genes which, in the naturally-occurring genome of the organism which the DNA of the invention is derived, flank the gene. Sialyl $Le^x$ determinants and sulfated determinants, are not required by the claimed invention drawn to nucleic acids. Applicant is reminded that no more of the reference is required than that it sets forth the substance of the invention.

14 Claim 10 and 12-14 are rejected under 35 U.S.C. § 102(a)(e) as being anticipated by Lasky et al. (U.S. Patent No. 5,304,640; 1449) (see entire document). Lasky et al. teach selectin ligand immunoglobulin fusion proteins as well as nucleic acids and the vectors and host cells comprising said nucleic acids. As defined on page 6, paragraph 3 of the instant specification; "purified nucleic acid" is DNA that is free of the genes which, in the naturally-occurring genome of the organism which the DNA of the invention is derived, flank the gene. Sialyl $Le^x$ determinants and sulfated determinants, are not required by the claimed invention drawn to nucleic acids. Applicant is reminded that no more of the reference is required than that it sets forth the substance of the invention.

15. Claim 10 and 12-14 are rejected under 35 U.S.C. § 102(b) as being anticipated by Larsen et al. (WO 94/10309) (see entire document). Larsen et al. teach P-selectin ligand immunoglobulin fusion proteins as well as nucleic acids and the vectors and host cells comprising said nucleic acids. As defined on page 6, paragraph 3 of the instant specification; "purified nucleic acid" is DNA that is free of the genes which, in the naturally-occurring genome of the organism which the DNA of the invention is derived, flank the gene. Sialyl $Le^x$ determinants and sulfated determinants, are not required by the claimed invention drawn to nucleic acids. Applicant is reminded that no more of the reference is required than that it sets forth the substance of the invention.

16. Claims 10, 13-14 are rejected under 35 U.S.C. § 102(b) as anticipated by Sasaki et al. (J. Biol. Chem., 1994; 1449) (see entire document). Sasaki et al. teach selectin ligands that have been modified to express carbohydrate moieties, as well as the nucleic acid, vector and cells that encode and express said modified ligands. As defined on page 6, paragraph 3 of the instant specification; "purified nucleic acid" is DNA that is free of the genes which, in the naturally-occurring genome of the organism which the DNA of the invention is derived, flank the gene. Sialyl $Le^x$ determinants and sulfated determinants, are not required by the claimed invention drawn to nucleic acids. Applicant is reminded that no more of the reference is required than that it sets forth the substance of the invention.

17. Claims 10, 12-14 are rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103 as obvious over Meier et al. (Biochem. J., 1993) (see entire document). Meier et al. teach immunoglobulin fusion proteins that have been modified to express carbohydrate moieties, as well as the vector and cells that encode said modified proteins. This reference differs from the claimed invention by not providing the nucleic acid sequences per se, however this reference clearly directs the ordinary artisan to the construction of said modified immunoglobulin fusion proteins. Therefore, the ordinary artisan would have immediately envisioned the claimed nucleic acids at the time the invention was made. Alternatively, it would have been obvious to the ordinary artisan to derive said nucleic acids, given the teachings of this reference. The burden is on the applicant to establish a patentable distinction between the claimed and referenced products. See In re Best, 195 USPQ 430, 433 (CCPA 1977); In re Marosi, 218 USPQ 289, 292-293 (Fed. Cir. 1983); In re Fitzgerald et al., 205 USPQ 594 (CCPA 1980).

18. Claims 10 and 12-14 are rejected under 35 U.S.C. § 103 as being unpatentable over Lasky et al. (U.S. Patent No. 5,304,640; 1449) OR Larsen et al. (WO 94/10309) OR Seed et al. (U.S. Patent No. 5,723,583 (see entire document). in view of
Sasaki et al. (J. Biol. Chem., 1994; 1449) OR Meier et al. (Biochem. J., 1993) OR Norgard et al. (PNAS, 1993) OR Natsuka et al. (J. Biol. Chem., 1994; 1449).

The instant claims are drawn to nucleic acids encoding organic molecules, including immunoglobulin fusion proteins and encompassing wherein said organic molecules or immunoglobulin fusion proteins have modified sialyl $Le^x$ determinants and sulfated determinants. As pointed out above and as defined on page 6, paragraph 3 of the instant specification; "purified nucleic acid" is DNA that is free of the genes which, in the naturally-occurring genome of the organism which the DNA of the invention is derived, flank the gene. Sialyl $Le^x$ determinants and sulfated determinants, are not required by the claimed invention drawn to nucleic acids. In the interest of compact prosecution, the following art rejection is provided to indicate the motivation and expectation of success at the time the invention was made to derived nucleic acids, vectors and cells that encoded organic molecules including fusion proteins with modified sialyl $Le^x$ determinants and sulfated determinants.

Lasky et al.OR Larsen et al. OR Seed et al.are taught above and do provide teachings of nucleic acids, vectors and host cells to express organic molecules, including fusion proteins or immunoglobulins to regulate as well as to inhibit receptor-ligand interactions. In addition, these references recognized the art-known importance of carbohydrates in such receptor-ligand interactions.

In addition to Seed et al., Sasaki et al., Meier et al., Norgard et al. or Natsuka et al. (see entire documents) all teach modifications encompassing sialyl $Le^x$ determinants or sulfated determinants that affect receptor-ligand interactions, including the motivation of such modifications in characterizing structure-function relationships between such receptor-ligand interactions as well as their use to modify such receptor-ligand interactions.

One of ordinary skill in the art at the time the invention was made would have been motivated to select nucleic acids encoding organic molecules including immunoglobulin fusion proteins and to modify the expression of sialyl $Le^x$ determinants and sulfated determinants on said organic molecules to evaluate their effects in receptor-ligand interactions as well as to regulate said interactions. From the teachings of the references, it was apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole was prima facie obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

19. No claim is allowed.

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phillip Gambel whose telephone number is (703) 308-3997. The examiner can normally be reached Monday through Thursday from 7:30 am to 6:00 pm. A message may be left on the examiner's voice mail service. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lila Feisee can be reached on (703) 308-2731. Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center 1600 receptionist whose telephone number is (703) 308-0196.

Papers related to this application may be submitted to Technology Center 1600 by facsimile transmission. Papers should be faxed to Technology Center 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CM1 Fax Center telephone number is (703) 305-3014 or (703) 308-4242.

Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be addressed to **[lila.feisee@uspto.gov]**.

All Internet e-mail communications will be made of record in the application file. PTO employees do not engage in Internet communications where there exists a possibility that sensitive information could be identified or exchanged unless the record includes a properly signed express waiver of the confidentiality requirements of 35 U.S.C. 122. This is more clearly set forth in the Interim Internet Usage Policy published in the Official Gazette of the Patent and Trademark on February 25, 1997 at 1195 OG 89.

Phillip Gambel, Ph.D.
Patent Examiner
Technology Center 1600
April 13, 1998